REMARKS

Status of the Claims

Claims 1-32 are pending herein.

Rejection of claims 1, 3-5, 7, 8, 16-18 and 21-24 under 35 U.S.C. 102(a)

Claims 1, 3-5, 7, 8, 16-18 and 21-24 are rejected under 35 U.S.C. 102(e) as anticipated by U.S. Patent No. 6,383,664 to Bernius et al. The Applicants respectfully traverse this rejection and its supporting remarks.

Independent claim 1 is directed to an OLED device structure comprising: (a) a substrate; (b) an OLED display area comprising one or more active pixels disposed over the substrate, wherein each of the pixels comprises an anode region, a cathode region and a light-emitting region; (c) a cover over the OLED display area, wherein the cover permits transmission of light from the one or more active pixels to an outer environment, and wherein the cover and the substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the OLED display area; and (d) a patterned getter layer disposed between the substrate and the cover. The patterned getter layer is configured so as to substantially avoid obstructing the transmission of the light that is permitted by the cover from the one or more pixels to the outer environment.

Similarly, independent claim 21 is directed to an organic optoelectronic device structure comprising: (a) a substrate; (b) an organic optoelectronic device selected from an organic phototransistor, an organic photodetector, and an organic photovoltaic device disposed over the substrate; (c) a cover over the organic optoelectronic device, wherein the cover permits transmission of light between an outer environment and the organic optoelectronic device, and wherein the cover and the substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the organic optoelectronic device; and (d) a patterned getter layer disposed between the substrate and the cover. The patterned getter layer is configured so as to substantially avoid obstructing the transmission of the light that is permitted by the cover between the outer environment and the organic optoelectronic device.

Independent claim 17 is directed to a method of making an OLED device structure comprising: (a) providing a substrate; (b) forming an OLED display area over the substrate, the OLED display area comprising one or more active pixels, wherein each of the one or more active pixels comprises an anode region, a cathode region and a light-emitting region; (c) providing a cover over the OLED display area, wherein the cover permits transmission of light from the one or more active pixels to an outer environment, and wherein the cover and the substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the OLED display area; and (d) providing a patterned getter layer between the substrate and the cover. The patterned getter layer is configured so as to substantially avoid obstructing the transmission of the light from the one or more pixels to the outer environment that is permitted by the cover.

"To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim." *Brown v. 3M,* 265 F.3d 1349, 60 USPQ2d 1375 (Fed. Cir. 2001).

Applicants respectfully submit that Bernius et al. fails to meet these criteria.

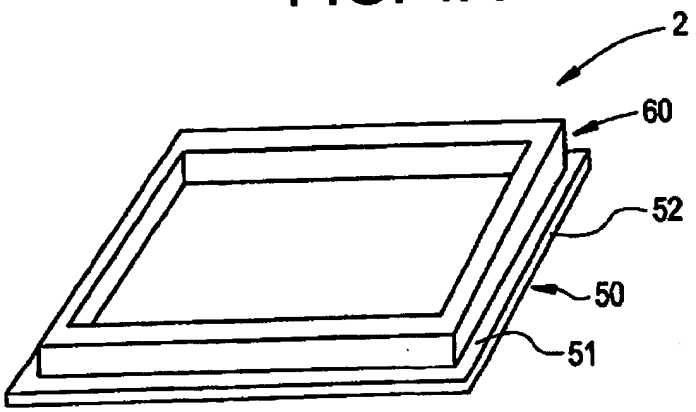
Independent claims 1, 17 and 21 require, among other things, *a patterned getter layer*, which is disposed between a substrate and a cover, and which is *configured so as to substantially avoid obstructing light transmission that is permitted by the cover between an organic device and an outer environment.*

The following assertion is made at page 10 of the final Office Action of June 20, 2003: "For transmission of light from the device through the lid it can be anticipated that the getter (barium film) is patterned (deposited) on the raised rim. In Fig. 1A the getter is on the inside raised rim portion."

This assertion, however, is not supported by the teachings of Bernius et al.

For example, Fig. 1A of Bernius et al. (reproduced below) illustrates a "cover 2 having a *lid 50* and a raised rim 60 extending from the bottom surface 51 of the lid 50. The rim 60 is recessed from the outer edge 52 of the lid 50." Bernius et al. at col. 3, lines 36-39 (emphasis added).

FIG. 1A



Bernius et al., at col. 5, line 64 to col. 6, line 1, further states that "the inner surface of the ***lid [50]*** is coated with a thin film of reactive metal which serves as a sacrificial 'getter' of traces of moisture, oxygen, and other potential harmful contaminants trapped inside the sealed cavity." (Emphasis added.)

Therefore, where a getter layer is employed, the devices of Bernius et al. are clearly intended to be bottom (substrate) emitting devices, because Bernius teaches that the inner surface of the lid [50] is to be coated with the getter. Moreover, there is no teaching or suggestion of a patterned getter (e.g., a getter layer provided in the form of a ring, a getter layer provided between pixels, a getter layer provided as narrow bands or small dots of getter material, etc.) in Bernius et al.

See also the Example in Bernius, where the glass lid is sand-blasted, and a film of barium is deposited, without patterning, onto the cavity formed by the raised rim that is created by the sand-blasting. Note that the sand-blasting and the getter deposition would render the device unfit for emission through the lid.

In view of the above, it is respectfully submitted that the subject matter of independent claims 1, 17 and 21 is neither taught nor suggested by Bernius et al.

Moreover, claims 3-5, 7, 8, 16, 18, 22, 23 and 24, which are dependent upon independent claims 1, 17 and 21, are patentable over Bernius et al. for at least the same reasons as are claims 1, 17 and 21.

Reconsideration and withdrawal of the rejection of claims 1, 3-5, 7, 8, 16-18 and 21-24 under 35 U.S.C. 102(e) as being anticipated by Bernius et al. are respectfully requested.

Rejection of Claims 2, 12-15, 19 and 20 under 35 U.S.C. 103(a)

Claims 2, 12-15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of U.S. Pat. No. 6,465,953 to Duggal. The Applicants respectfully traverse this rejection and its supporting remarks.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. 103(a): (1) there must be some suggestion or motivation to modify/combine the references of record, and (2) there must be a reasonable expectation of success. See MPEP §2143. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *Id.* The mere fact that references *can* be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination or modification. MPEP 2143.01 (emphasis added) (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)).

As noted above, independent claims 1, 17 and 21 are patentable over Bernius et al., at least because Bernius et al. does not teach or suggest a patterned getter layer, which is disposed between a substrate and a cover, and which is configured so as to substantially avoid obstructing light transmission that is permitted by the cover between an organic device and an outer environment.

Duggal does not make up for the above deficiencies in Bernius et al. For example, see col. 3, lines 18-27 of Duggal (emphasis added):

> Plastic substrates for a device sensitive to water and/or oxygen, such as an organic light emitting device, with increased resistance to water and/or oxygen are disclosed. *The plastic substrates comprise a transparent or substantially transparent polymer **filled with particles of a getter material*** having a particle size which is smaller than the characteristic wavelength of light emitted by the organic light emitting device, and thus small enough so as to maintain the substantial transparency of the substrate, generally but not necessarily having a size of less than 100 nanometers (nm).

See also col. 7, lines 45 *et seq.* of Duggal. Hence, in contrast to the invention as presently claimed in independent claims 1, 17 and 21, Duggal does not teach or suggest (a) a *patterned* getter *layer*, which is (b) disposed *between* a substrate and a cover. Instead, Duggal teaches (a) getter *particles*, which are (b) disposed *within* a substrate layer.

For at least these reasons, it is respectfully submitted that one of ordinary skill in the art, upon reading Bernius et al. in combination with Duggal, would *not* have found it obvious to modify/combine these references so as to provide a patterned getter layer, which is disposed between a substrate and a cover, and which is configured so as to substantially avoid obstructing light transmission that is permitted by the cover between an organic device and an outer environment, as claimed in claims 1, 17 and 21.

Because they depend from claim 1 or claim 17, it is respectfully submitted that claims 2, 12-15, 19 and 20 are likewise patentable over Bernius et al. in view of Duggal for at least the above reasons.

Accordingly, reconsideration and withdrawal of the rejection of claims 2, 12-15, 19 and 20 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of Duggal are respectfully requested.

Rejection of Claims 6 and 25 under 35 U.S.C. 103(a)

Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of U.S. Pat. No. 5,931,713 to Watkins et al. The Applicants respectfully traverse this rejection and its supporting remarks.

As noted above, independent claims 1 and 21 are patentable over Bernius et al., at least because Bernius et al. does not teach or suggest a patterned getter layer, which is disposed between a substrate and a cover, and which is configured so as to substantially avoid obstructing light transmission that is permitted by the cover between an organic device and an outer environment.

Watkins et al., which the Office Action proposes combining with Bernius, is taken from art that is far removed from the organic optoelectronic device art. For example, the devices of Watkins et al. are field emission displays, which are vacuum-sealed devices in which electrons are emitted from a cathode, striking a phosphor coated

anode, whereupon light is produced. See, e.g., col. 1, lines 6-17. The devices of the present invention, on the other hand are organic optoelectronic devices, which are not vacuum devices, and which are not based on electron emission.

Moreover, Watkins et al. teaches that the getter should be placed in the space between the anode and cathode, and thus is integral with the active region of the device. See, e.g., col. 1, lines 29-31. On the other hand, in the device of Bernius et al., the getter is placed on the cover. See, e.g., col. 5, lines 64-66 and col. 6, lines 34-36. Thus, in contrast to the device of Watkins et al., the getter region in the device of Bernius et al. is *not* provided in the active region of the device between the anode and cathode. Indeed, if one were to combine the references and place the metallic getters of Watkins et al. (or of Bernius et al.) between the anode and cathode of an OLED or organic optoelectronic device, harmful consequences would result.

For at least these reasons it is respectfully submitted one of ordinary skill in the art, upon reading Bernius et al. in combination with Watkins et al., would not have found it obvious to modify/combine these references to provide the invention as presently claimed in independent claims 1 and 21.

Claims 6 and 25 are patentable over Bernius et al. in view of Watkins et al., at least because they depend from either claim 1 or claim 21.

Accordingly, reconsideration and withdrawal of the rejection of claims 6 and 25 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of Watkins et al. are respectfully requested.

Rejection of Claims 9-11 –35 U.S.C. 103(a)

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. The Applicants respectfully traverse this rejection and its supporting remarks.

As noted above, independent claim 1 is patentable over Bernius et al., at least in that Bernius et al. does not teach or suggest a patterned getter layer, which is disposed between a substrate and a cover, and which is configured so as to substantially avoid obstructing light transmission that is permitted by the cover between an organic device

and an outer environment. Claims 9-11 are likewise patentable over Bernius et al. at least because they depend from claim 1.

Accordingly, reconsideration and withdrawal of the rejection of claims 9-11 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. are respectfully requested.

Rejection of Claims 26 and 28-31 under 35 U.S.C. 103(a)

Claims 26 and 28-31are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of Duggal. The Applicants respectfully traverse this rejection and its supporting remarks.

Claim 26 is directed to a flexible OLED device structure comprising: (a) a flexible substrate; (b) a flexible OLED display area comprising a plurality of active pixels disposed over the substrate, each of the plurality of active pixels comprising an anode region, a cathode region and a light-emitting region; (c) a flexible cover over the OLED display area, wherein at least one of the flexible substrate and the flexible cover permits transmission of light from the plurality of active pixels to an outer environment, and wherein the flexible cover and the flexible substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the OLED display area; and (d) a patterned getter layer disposed between the flexible substrate and the flexible cover, wherein at least a portion of the patterned getter layer is provided over non-emitting regions of the OLED display area between at least some of the plurality of pixels.

As noted above, Bernius et al. describes a rigid cover having a raised rim, which defines a shallow cavity, onto which a film of getter material is deposited. Hence, Bernius et al. does not teach or suggest a patterned getter layer. Moreover, Bernius et al. does not teach or suggest a flexible OLED device, and indeed, teaches away from such a device by teaching that the cover should be rigid and hence resistant to flexing during handling.

Duggal does not make up for the above deficiencies in Bernius et al., for example, because Duggal neither teaches nor suggests (a) a *patterned* getter *layer* that is (b) disposed *between* a substrate and a cover. Instead, Duggal teaches (a) getter *particles* that are (b) disposed *within* a substrate layer.

For at least these reasons it is respectfully submitted one of ordinary skill in the art, upon reading Bernius et al. in combination with Duggal, would not have found it obvious to modify/combine these references to provide the invention as claimed in claim 26.

At least because they depend from claim 26, it is respectfully submitted that claims 28-31 are likewise patentable over Bernius et al. in view of Duggal.

Accordingly, reconsideration and withdrawal of the rejection of claims 26 and 28-31 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of either Duggal are respectfully requested.

Rejection of Claim 27 under 35 U.S.C. 103(a)

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al. in view of Duggal and further in view of U.S. Patent No. 6,146,225 to Sheats et al. The Applicants respectfully traverse this rejection and its supporting remarks.

As noted above, claim 26 is patentable over Bernius et al. in view of Duggal. Sheats, which is directed to transparent, flexible permeability barriers, does not make up for the above noted deficiencies in Bernius et al. and Duggal. For at least this reason, claim 26 is patentable over Bernius et al., Duggal and Sheats et al.

At least because it depends from claim 26, it is respectfully submitted that claim 27 is likewise patentable over Bernius et al., Duggal and Sheats et al.

Accordingly, reconsideration and withdrawal of the rejection of claim 27 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al., Duggal and Sheats et al. are respectfully requested.

Rejection of Claim 32 under 35 U.S.C. 103(a)

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernius et al., Duggal and Watkins et al. The Applicants respectfully traverse this rejection and its supporting remarks.

As noted above, claim 26 is patentable over Bernius et al. in view of Duggal. Watkins et al. does not overcome the above noted deficiencies in Bernius et al. and Duggal. For example, Watkins et al. does not teach or suggest a flexible OLED device.

Moreover, as noted above, Watkins et al. is taken from art that is far removed from the organic optoelectronic device art. For example, the devices of Watkins et al. are field emission displays, which are vacuum-sealed devices in which electrons are emitted from a cathode, striking a phosphor coated anode, whereupon light is produced. In contrast, the devices of the present invention, on the other hand are organic optoelectronic devices, which are not vacuum devices, and which are not based on electron emission.

Furthermore, the getter in Watkins et al. is placed in the space between the anode and cathode, and thus is integral with the active region of the device. On the other hand, in the device of Bernius et al., the getter is placed on the cover, while in the device of Duggal it is placed within the substrate. Thus, in contrast to the device of Watkins et al., the getter regions in the devices of Bernius et al. and Duggal are *not* provided in the active region of the device between the anode and cathode.

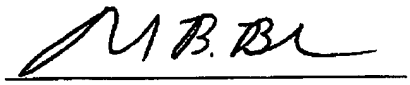
For at least these reasons, it is respectfully submitted that claim 26 is patentable over Bernius et al., Duggal and Watkins et al. At least because it depends from claim 26, claim 32 is patentable over Bernius et al., Duggal and Watkins et al. as well.

Accordingly, reconsideration and withdrawal of the rejection of claim 32 under 35 U.S.C. 103(a) as being unpatentable over Bernius et al., Duggal and Watkins et al. are respectfully requested.

CONCLUSION

Applicants submit that claims 1-32 are in a condition for allowance, early notification of which is earnestly solicited. The Examiner is encouraged to telephone the Applicant's attorney at (703) 433-0510 in order that any outstanding issues be resolved.

Respectfully submitted,



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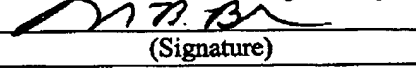

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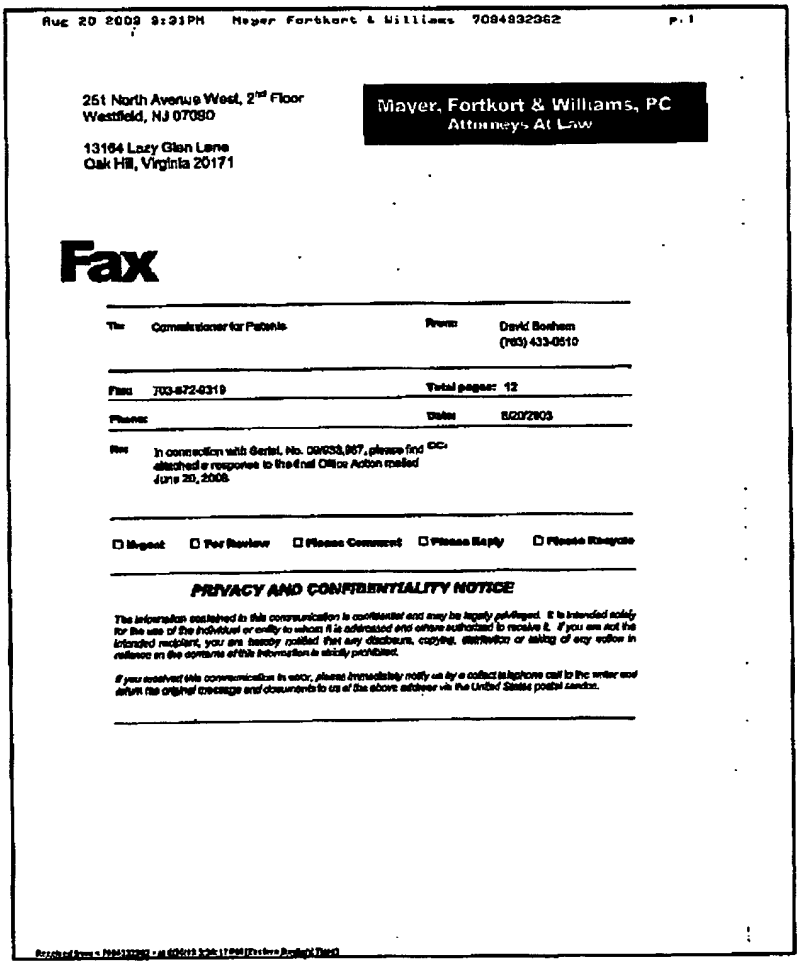

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